MMX Series

VIDEO WITH AUDIO AND VGA WITH AUDIO MINI MATRIX SWITCHERS

- 150 MHz (-3dB) video bandwidth, fully loaded (composite video and S-video models)
- 300 MHz (-3dB) RGB video bandwidth, fully loaded (MMX 32 VGA A)
- Balanced and unbalanced audio switching
- Input audio gain and attenuation
- Audio breakaway (composite video and S-video models only)
- RS-232 control
- Contact closure remote control (MMX 32 VGA A)
- Rack-mountable

MMX 42 AV RCA

MMX 62 SV RCA

MMX 32 VGA A

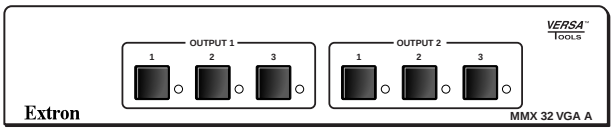
The Extron MMX Series of Video and VGA Matrix Switchers combine full-sized matrix capabilities with a compact 1U, half rack width VersaTools™ enclosure, providing economical and simple-to-use routing and switching solutions for composite video, S-video, or VGA with stereo audio (balanced/unbalanced).

DESCRIPTION

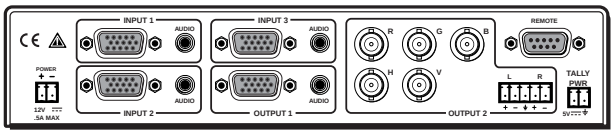
The Extron **MMX Series** of Video and VGA Matrix Switchers are economical, compact units that are effective in small installations, such as conference rooms, classrooms, and home theatres. All models can function as either the primary switcher or as sub-switchers in a larger system. The intuitive front panels with tactile buttons and LED indicators of the MMX Series enable easy control of inputs and outputs for non-technical users. MMX matrix switchers are housed in 1U high, half rack width VersaTools™ enclosures.

Composite Video and S-Video with Stereo Audio Switchers
The MMX Series of composite video and S-video with stereo audio switchers come in 4x2 and 6x2 models. Key features include genlock to input one, which allows all signals to switch at the same vertical interval timing for smooth, seamless transition; front panel security lockout for environments where easy access is undesirable; quad standard compatibility with NTSC 3.58, NTSC 4.43, PAL, and SECAM signals; and RS-232 for control via a third party control system.

VGA-UXGA and Audio Matrix Switcher
The MMX 32 VGA A 3x2 VGA matrix switcher with audio allows users to easily switch between three computer-video (VGA-UXGA) and stereo audio signals using two sets of direct access buttons. Users can connect a VGA and audio cable directly from the source to the switcher. Output one is optimized for local or preview monitor, while output two is optimized for connection to the main presentation display and house sound system. The unit can be controlled through RS-232 via a third party control system and by contact closure with tally power, which allows the user to control both outputs from remote locations.



MMX 32 VGA A (Front)



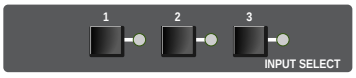
MMX 32 VGA A (Back)

FEATURES

- **150 MHz (-3dB) bandwidth, fully loaded** – Ensures switching and distribution of most signals without degradation. The ratings are worst case specifications, i.e., the MMX Series provide 150 MHz (-3dB) at full performance capacity — when one input signal drives all outputs.
- **300 MHz (-3dB) bandwidth, fully loaded (MMX 32 VGA A only)** – Ensures switching and distribution of most signals without degradation. The ratings are worst case specifications, i.e., the MMX 32 VGA A provides 300 MHz (-3dB) at full performance capacity — when one input signal drives all outputs.
- **Buffered I/O** – Each input and output is individually buffered to provide maximum performance with virtually no crosstalk.
- **View I/O mode (MMX 42 & MMX 62 only)** – Allows users to easily see which individual inputs and outputs are actively connected. Available from the front panel or RS-232 control.

FEATURES (CONT.)

- **Captive screw or RCA audio connections** – The MMX Series AV and SVA matrix switcher models provide captive screw input and output connectors for balanced or unbalanced stereo audio signals. The RCA models feature RCA female connectors and are compatible with unbalanced audio signals only.
- **Input audio gain and attenuation (adjustable via RS-232)** – The Extron MMX 42/62 Series allows users to set the level of audio gain or attenuation (-18dB to +24dB). Individual input audio levels may be adjusted so there are no noticeable volume differences when switching between sources.
- **Audio breakaway** – The MMX Series matrix switchers provide the capability to break away an audio signal from its corresponding video signal. Audio breakaway switching can be done via the front panel or RS-232 control.
- **RS-232 control** – A rear panel RS-232 control port provides connection of the MMX Series to a third party control system.
- **Simple Instruction Set (SIS™)** – Extron SIS is a set of basic ASCII code commands that provide simple control through a third party control system. Instead of programming in long, obscure strings of code, SIS makes it easy to operate an Extron product using RS-232 control.
- **Rack-mountable** – The MMX Series Switchers are housed in 1U, half rack width rugged metal enclosures and can be rack-mounted using an optional rack shelf.
- **External international power supply** – Provides worldwide power compatibility (part # 70-055-01).
- **MMX 32 AAP and MMX 32 MAAP remote control** – The MMX 32 MAAP contains input selection buttons and LED indicators to control an MMX 32 VGA A matrix switcher. The MMX 32 MAAP is a single space Mini Architectural Adapter Plate (MAAP) that can be installed in any Extron MAAP mounting panel. The MMX 32 MAAP enables a user to remotely select an input to route to one of the matrix switcher outputs.



MMX 32 AAP

MMX 32 MAAP

SPECIFICATIONS

VIDEO

Routing	
MMX 32	3 x 2 matrix
MMX 42 Series	4 x 2 matrix
MMX 62 Series	6 x 2 matrix
Gain	Unity
Bandwidth	
MMX 32	300 MHz (-3dB), fully loaded 0 – 10 MHz: no more than +0.1dB to -0.1dB 0 – 130 MHz: no more than +2dB to -0.1dB
MMX 42/62 Series	150 MHz (-3dB), fully loaded 0 - 10 MHz: no more than 0.1dB to -0.1dB 0 - 30 MHz: no more than 0.5dB to -0.5dB
Phase between I/Os (42/62 Series)	<1.28° at 3.58 MHz
Differential phase error (42/62)	0.1° at 3.58 MHz and 4.43 MHz
Differential gain error (42/62)	0.1% at 3.58 MHz and 4.43 MHz
Max. propagation of delay (42/62)	5 ns typical (±1 ns)
Crosstalk	
MMX 32	-55dB @ 10 MHz, -45dB @ 30 MHz, -37dB @ 100 MHz
MMX 42/62 Series	-50dB @ 5 MHz
Switching speed	200 ns (max.)

VIDEO INPUT

Number/signal type
- MMX 32 ..... 3 RGBHV, RGBS, RGsB, RsGsBs
- MMX 42 and MMX 62 video models ..... 4 or 6 composite video
- MMX 42 and MMX 62 S-video models ..... 4 or 6 S-video

Connectors
- MMX 32 ..... (3) 15-pin HD female
- MMX 42 and MMX 62 video models ..... 4 or 6 female BNC
- MMX 42 and MMX 62 S-video models ..... 4 or 6 female 4-pin mini DIN

Nominal level ..... 1V p-p for Y of S-video, and for composite video
0.7V p-p for RGB
0.3V p-p for C of S-video

Min./max. levels
- MMX 32 ..... Analog: -0.5V to 2.0V p-p no offset at unity gain
- MMX 42/62 Series ..... Analog: 0.5V to 2.0V p-p with no offset

Impedance ..... 75 ohms
Horizontal frequency (MMX 32) ..... 15 kHz to 145 kHz
Vertical frequency (MMX 32) ..... 30 Hz to 170 Hz
Return loss
- MMX 32 ..... <-42dB @ 5 MHz
- MMX 42/62 Series ..... <-30dB @ 5 MHz

Max. DC offset
- MMX 32 ..... 4.0V
- MMX 42/62 Series 1.5V

VIDEO OUTPUT

Number/signal type
- MMX 32 ..... 2 analog RGBHV, RGBS, RGsB
- MMX 42 & MMX 62 video models ..... 2 composite video
- MMX 42 & MMX 62 S-video models ..... 2 S-video

Connectors
- MMX 32 ..... (1) 15-pin HD female & (1) 5 BNC female
- MMX 42 & MMX 62 video models ..... 2 female BNC
- MMX 42 & MMX 62 S-video models ..... 2 female 4-pin mini DIN

Nominal level ..... 1V p-p for Y of S-video, and for composite video
0.7V p-p for RGB, 0.3V p-p for C of S-video

Min./max. levels
- MMX 32 ..... 0.3V to 2.0V p-p
- MMX 42/62 ..... 0V to 2.0V p-p

Impedance ..... 75 ohms
Return loss ..... -30dB @ 5 MHz
DC offset ..... ±5mV max. with input at 0 offset
Switching type ..... Vertical interval

SYNC — FOR MMX 32, UNLESS OTHERWISE INDICATED

Input type ..... RGBHV, RGBS, RGsB, RsGsBs
Output type ..... RGBHV, RGBS, RGsB
Standards (MMX 42/62 Series) ..... NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level ..... 2.5V to 5.0V p-p, 4.0V p-p normal
Output level ..... AGC to TTL: 4V to 5V p-p, unterminated
Input impedance ..... 10 k ohms
Output impedance ..... 75 ohms
Max input voltage ..... 5V p-p
Max. propagation delay ..... 30 ns
Max. rise/fall time ..... 4.2 ns
Polarity ..... RGBHV: when RGBHV is input, polarity follows input; otherwise negative
RGBs, RGsB: negative

AUDIO

Routing
- MMX 32 ..... 3 x 2 stereo matrix
- MMX 42 Series ..... 4 x 2 stereo matrix
- MMX 62 Series ..... 6 x 2 stereo matrix

Gain — MMX 32
- Program output ..... Unbal. output: 0dB; bal. output: +6dB
- Local output ..... Unbal. output: 0dB

Gain — MMX 42/62 Series
- Captive screw models ..... Unbal. output: -6dB; bal. output: 0dB
- RCA connector models ..... Unbal. output: 0dB

Frequency response ..... 20 Hz to 20 kHz, ±0.05dB
THD + Noise
- MMX 32 ..... 0.03% @ 1 kHz, 0.3% @ 20kHz nominal level
- MMX 42/62 Series ..... 0.03% @ 1 kHz at rated nominal level

S/N ..... >90dB, at rated max. output
Crosstalk ..... <-80dB @ 1 kHz, fully loaded
Stereo channel separation ..... >90dB @ 1 kHz
CMRR ..... >75dB @ 20 Hz to 20 kHz

AUDIO INPUT

Number/signal type
- MMX 32 ..... 3 stereo, PC level, unbal.
- Captive screw models ..... 4 or 6 stereo, bal./unbal.
- RCA connector models ..... 4 or 6 stereo, unbal.

Connectors
- MMX 32 ..... (3) 3.5 mm mini stereo jacks
- Captive screw models ..... (4 or 6) 3.5 mm captive screw connectors, 5 pole
- RCA connector models ..... 4 or 6 pairs of female RCA connectors

Impedance
- MMX 32 ..... 25 kohms bal./unbal., DC coupled
- MMX 42/62 Series ..... >10 kohms unbal./bal., DC coupled

Nominal level ..... -10dBV (316mV)
Max. level
- MMX 32 ..... +8.5dBu, (unbal.) at 1%THD+N
- MMX 42/62 Series ..... +19.5dBu, (bal. or unbal.) at 1%THD+N

Input gain adjustment ..... –18dB to +24dB, adjustable per input via RS-232 only

AUDIO OUTPUT

Number/signal type
- Captive screw models ..... 2 stereo, bal./unbal.
- RCA connector models ..... 2 stereo, unbal.

Connectors
- MMX 32 ..... (1) 3.5 mm mini stereo audio jack (unbal.)
(1) 3.5 mm captive screw connector, 5 pole
- Captive screw models (2) 3.5 mm captive screw connectors, 5 pole
- RCA connector models ..... 2 pairs of female RCA connectors

Impedance ..... 50 ohms unbal., 100 ohms bal.
Gain error ..... ±0.1dB channel to channel
Max. level (Hi-Z) ..... >+21dBu, bal. or unbal. at stated %THD+N
Max. level (600 ohm)
- MMX 32 program audio: >+14dBm, bal. or unbal. at stated %THD+N
- MMX 42/62 models: >+15dBm, bal. or unbal. at stated %THD+N

NOTE: 0dBu = 0.775 volts (RMS).

CONTROL/REMOTE — SWITCHER

Serial control port
- MMX 32 ..... RS-232, 9-pin female D connector
- MMX 42/62 Series ..... RS-232, female 3.5 mm captive screw, 3-pole

Baud rate and protocol ..... 9600, 8-bit, 1 stop bit, no parity
Serial control pin configurations
- MMX 32 ..... 2 = TX, 3 = RX, 5 = GND
- MMX 42/62 Series ..... 1 = TX, 2 = RX, 3 = GND

Contact closure (MMX 32 only) ..... 9-pin female D connector
Output 1: 1= input 1, 4 = input 2, 6 = input 3, 5=GND
Output2 : 7= input 1, 8 = input 2, 9 = input 3, 5=GND

Program control ..... Extron's control program for Windows®
Extron's Simple Instruction Set™ – SIS™

GENERAL

Power ..... 100VAC to 240VAC, 50/60 Hz, external, autoswitchable; to 12VDC, 1 A power supply.
- MMX 32 ..... 15 watts, product requires 0.7 A.
- MMX 42/62 Series ..... 6 watts, product requires 0.5 A.

Rack mount ..... Yes, with optional rack shelf, part #60-190-01 or #60-190-20; also furniture mountable with optional under-desk mounting kit #70-212-01
Enclosure type ..... Metal
Enclosure dimensions ..... 1.75" H x 8.75" W x 3.0" D (1U high, half rack width) 4.4 cm H x 22.2 cm W x 7.6 cm D (Depth excludes connectors.)

Product weight
- MMX 32 ..... 2.5 lbs (1.1 kg)
- MMX 42/62 Series ..... 4.0 lbs (1.8 kg)

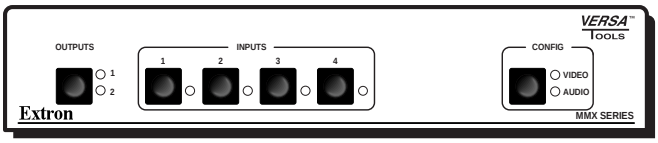
Shipping weight ..... 5 lbs (2.3 kg)
Listings ..... UL, CUL
Compliances ..... CE, FCC Class A , VCCI, AS/NZS, ICES

Model	Part Numbers
Composite Video and Stereo Audio Switchers	
MMX 42 AV	60-556-21
MMX 42 AV RCA	60-556-31
MMX 62 AV	60-557-21
MMX 62 AV RCA	60-557-31
S-Video and Stereo Audio Switchers	
MMX 42 SVA	60-556-22
MMX 42 SVA RCA	60-556-32
MMX 62 SVA	60-557-22
MMX 62 SVA RCA	60-557-32

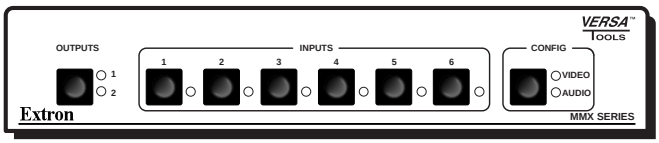
Model	Part Numbers
VGA-UXGA and Audio Switcher	
MMX 32 VGA A	60-565-01
MMX Remote Control Options	
MMX 32 AAP (gray)	70-277-01
MMX 32 AAP (black)	70-277-11
MMX 32 AAP (White)	70-277-21
MMX 32 MAAP (Black)	70-277-12
MMX 32 MAAP (white)	70-277-22

Specifications are subject to change without notice.

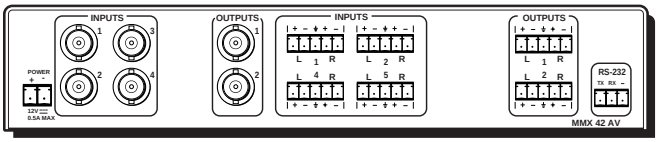
PANEL DRAWINGS



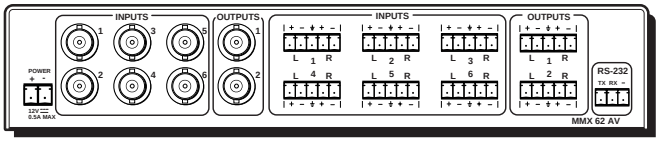
MMX 42 Front



MMX 62 AV Front



MMX 42 Back



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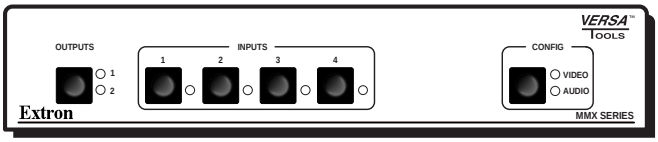
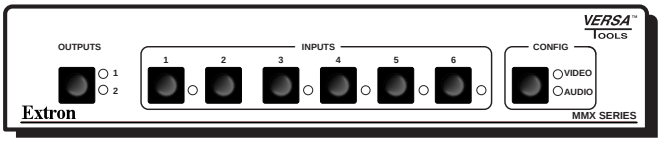
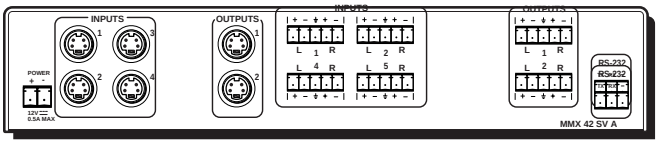


MMX 42 SV A Front



MMX 62 SV A Front



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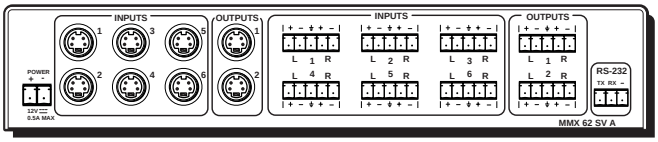
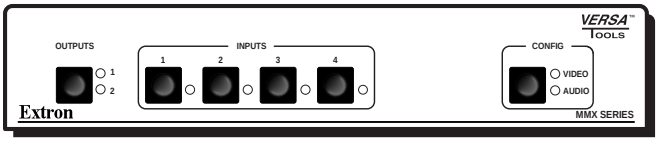
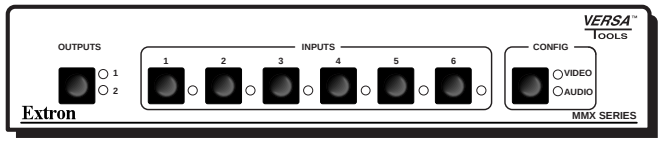


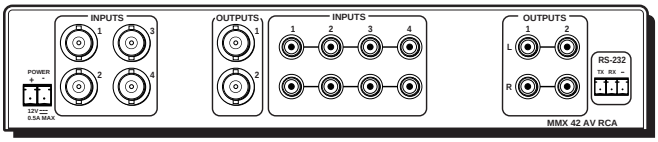
MMX 62 SV A Back



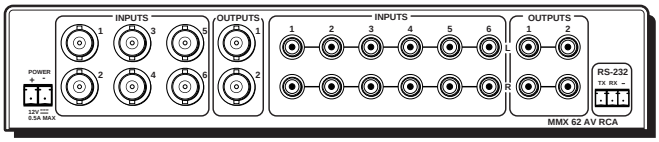
MMX 42 AV RCA Front



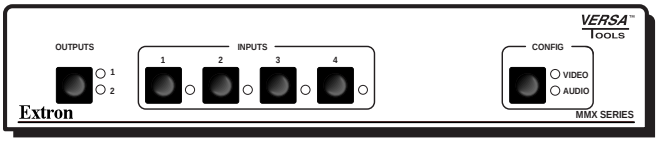
MMX 62 AV RCA Front



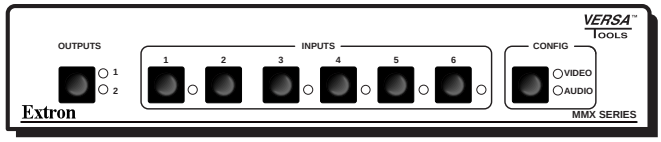
MMX 42 AV RCA Back



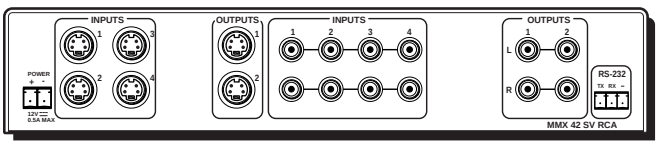
MMX 62 AV RCA Back



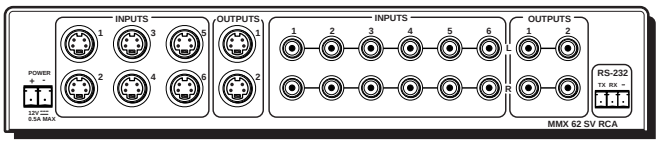
MMX 42 SV RCA Front



MMX 62 SV RCA Front



MMX 42 SV RCA Back



MMX 62 SV RCA Back

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